REMARKS

Reconsideration of this application, based on this amendment and these following remarks, is respectfully requested.

Claims 45 through 49 through remain in this case. Claim 49 is amended.

Applicants note the indication that claims 47 and 48 are directed to allowable subject matter.

Claim 49 was rejected under §112, ¶2 as indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. The Examiner found that the phrase "said forward error corrected data" was indefinite as lacking proper antecedent basis.

Claim 49 is amended to cancel the words "forward error corrected" from the claim, obviating the rejection. Applicant submits that the amendment presented to claim 49 is in no way narrowing,[1] and that no new matter is presented by this amendment. Applicants respectfully submit that amended claim 49 is sufficiently definite to meet the requirements of §112. Reconsideration of this basis of the rejection is respectfully requested.

Claims 45 and 49 were rejected under §102 as anticipated by the Hulyalkar et al. reference.[2] Claim 46 was also apparently rejected under §102.

Regarding claim 45, the Examiner found that the reference teaches all of the elements of the claimed transmitting apparatus, specifically including an encoder[3] that is operative during a polled transmission mode, in which the central unit receiver must have prior knowledge of the identity of the transmitter, and also operative in a fast access mode in which such prior knowledge is not required.

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[1] *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 62 USPQ2d 1705 (2002), *on remand*, 304 F.3d 1289, 64 USPQ2d 1698 (Fed. Cir. 2002).
[2] U.S. Patent No. 5,291,289, issued March 1, 1994 to Hulyalkar et al.
[3] Hulyalkar, *supra*, element 20 in Figure 4.

Applicants respectfully traverse the rejection of claim 45 and its dependent claim 46, on the grounds that the encoder recited in claim 45 is not taught by the reference.

Claim 45 requires, among other elements, an encoder for encoding parallel data according to one of a first and a second modulation schemes responsive to a control signal, said first modulation scheme being operative during a polled transmission mode and requiring a receiver at said central unit to have prior knowledge of the identity of the selected remote unit for decoding, said second modulation scheme being operative during a fast access transmission mode and not requiring the receiver to have prior knowledge of the identity of the selected remote unit for decoding. As described in the specification, the polled transmission mode corresponds to a transmission mode in which particular symbol periods are assigned to each of a plurality of remote units,[4] and the fast access transmission mode corresponds to a transmission mode in which remote units can transmit communication access requests to the central unit on any unused or unallocated sub-channel during any symbol period, without regard to assignment of remote units to particular symbol periods.[5] Claim 45 requires that the encoder be capable of encoding the parallel data according to first and second modulation schemes, responsive to a control signal, that correspond to these polled and fast access transmission modes, respectively.

The invention of claim 45 is particularly advantageous in the upstream (remote unit to central unit) transmission of signals in a system, such as a cable television distribution system, in which the central unit is broadcasting to a large number of remote units, of differing distances from the central unit, from a common transmission utility.[6] This invention enables each remote unit to recognizably transmit upstream in its symbol period during busy times (*i.e.*, in which the polled mode is active) but to attain fast upstream access when traffic is light (*i.e.*, in which the fast access mode is active).[7]

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[4] *See* substitute specification of S.N. 10/051,593 at page 25, lines 19 through 23.
[5] Specification, *supra*, page 26, lines 23 through 35.
[6] Specification, *supra*, page 10, line 32 through page 11, line 21.
[7] Specification, *supra*, page 26, lines 3 through 35.

Applicants respectfully submit that the Hulyalkar et al. fails to disclose either of these transmission modes, and in fact fails to disclose an encoder in a transmission apparatus that is capable of encoding data according to a selected one of multiple modulation schemes, as required by claim 45.

First, the Examiner wholly failed to point to any teaching in the Hulyalkar et al. reference that teaches either of the polled or fast access transmission modes required by claim 45. In the rejection,[8] the Examiner asserts encoder 20 of the reference as the encoder of claim 45, and asserts receiver 130 of the reference as the central unit of claim 45, and restates the claim limitations regarding the polled and fast access transmission modes. But nowhere does the Examiner cite any teaching regarding the ability of the encoder of the Hulyalker et al. reference to encode according to these first and second modulation schemes, selected according to a control signal.

Applicants further submit that the Hulyalker et al. reference in fact fails to teach such an encoder. To the extent that the reference teaches modulation, in connection with its encoder 20, the encoding is described encoding "into a complex symbol, specified by an appropriate mapping on a QAM constellation".[9] While this encoding is according to a modulation scheme, the Hulyalker et al. reference fails to disclose that its encoder is capable of encoding according to one of multiple modulation schemes, in response to a control signal. The reference also fails to disclose that its transmission apparatus is capable of transmitting according to multiple transmission modes, much less multiple transmission modes corresponding to multiple modulation schemes. And therefore, the reference falls still further short of disclosing that its apparatus is capable of transmitting according to multiple transmission modes corresponding to multiple modulation schemes, where the multiple transmission modes correspond to a polled transmission mode in which identity of the remote unit must be known, and a fast access transmission mode in which knowledge of such identity is not required. But claim 45 requires this multiple modulation scheme capability of its encoder, with the schemes corresponding to these polled and fast access transmission modes.

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[8] Office Action of July 14, 2004, page 4, ¶5.

For this reason, Applicants respectfully submit that claim 45 is novel over the Hulyalker et al. reference.

Applicants further submit that there is no suggestion from the prior art to modify the teachings of the Hulyalker et al. reference in such a manner as to reach claim 45. As mentioned above, the claimed apparatus is especially advantageous in facilitating upstream traffic in a system having a central unit, a common transmission line, and multiple remote units. However, the Hulyalker et al. reference is clearly directed to a scheme for multicarrier modulation (MCM) transmission *from* a central unit *to* the multiple remote units.[10] There is simply no suggestion from the Hulyalker et al. reference itself, nor elsewhere in the prior art, to modify the Hulyalker et al. teachings to form an apparatus for transmitting data *from* a remote unit *to* the central unit, and to further modify this apparatus to encode according to two modulation schemes for two transmission modes, as claimed, especially considering that only one transmission mode is contemplated by the reference.

For these reasons, Applicants respectfully submit that claim 45 and its dependent claims are patentable over the prior art of record in this case.

Regarding claim 49, the Examiner asserted that the Hulyalker et al. reference teaches all of the elements of the claimed apparatus for receiving data sent from a remote unit to a central unit, specifically including an decoder that is operative during a polled transmission mode requiring prior knowledge of the identity of the remote unit, and that is also operative in a fast access mode in which such prior knowledge is not required.

The apparatus of claim 49 provides similar advantages as those discussed above relative to claim 45, specifically in providing a receiving apparatus, such as for a central unit, that can handle upstream transmissions from remote units in a system that broadcasts signals to multiple remote units. This invention enables the central unit to recognizably receive upstream communications from a remote unit both in a specific symbol period during busy times (*i.e.*, in

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[9] Hulyalker et al., *supra*, column 6, lines 44 through 47.
[10] Hulyalker et al., *supra*, column 1, lines 43 through 58; column 3, lines 31 through 52.

which the polled mode is active), but also to attain fast upstream access when traffic is light (*i.e.*, in which the fast access mode is active).[11]

Applicants respectfully traverse the rejection of claim 49, on the grounds that the Hulyalkar et al. reference fails to disclose all of the elements of the claim.

The Examiner asserts, in a conclusory manner, that the decoder of the Hulyalkar et al. reference is capable of the decoding demodulated data according to first and second demodulation schemes.[12] However, the Examiner nowhere cites any specific teachings of the reference regarding first and second demodulation schemes, nor does the Examiner anywhere cite any teachings of the reference regarding first and second transmission modes, nor does the Examiner anywhere cite any teachings of the reference regarding a polled transmission mode that requires prior knowledge of the identity of the selected remote unit or regarding a fast access transmission mode that does not require such knowledge.

And in fact, the Hulyalkar et al. reference does not teach these limitations of claim 49. To the extent that the reference teaches demodulation and decoding, this decoding is at most described as the complementary of the encoding function at the transmitter.[13] There is simply no mention of decoding according to one of multiple modulation schemes, in response to a control signal, as required by claim 49. There is no mention whatsoever in the reference of an apparatus for receiving upstream communications according to multiple transmission modes, much less multiple transmission modes corresponding to multiple modulation schemes, and still further less where the multiple transmission modes correspond to a polled transmission mode in which identity of the remote unit must be known, and a fast access transmission mode in which knowledge of such identity is not required. These limitations are required of the receiving apparatus of claim 49, but nowhere appear in the cited Hulyalker et al. reference.

For this reason, Applicants respectfully submit that claim 49 is novel over the Hulyalker et al. reference.

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[11] Specification, *supra*, page 26, lines 3 through 35.
[12] Office Action, *supra*, page 6, ¶5.
[13] Hulyalker et al., *supra*, column 13, lines 10 through 17.

Applicants further submit that there is no suggestion from the prior art to modify the teachings of the Hulyalker et al. reference in such a manner as to reach claim 49. As discussed above, the claimed apparatus is especially advantageous in facilitating upstream traffic in a system having a central unit, a common transmission line, and multiple remote units. The Hulyalker et al. reference is instead directed to a scheme for multicarrier modulation (MCM) transmission *from* a central unit *to* the multiple remote units.[14] There is simply no suggestion from the Hulyalker et al. reference itself, nor elsewhere in the prior art, to modify the Hulyalker et al. teachings to form an apparatus for receiving data *from* a remote unit, much less to modify its apparatus to decode according to two modulation schemes for two transmission modes as claimed.

For these reasons, Applicants respectfully submit that claim 49 is patentable over the prior art of record in this case.

Applicants note that the cover sheet to the Office Action indicates that the action is in response to the Preliminary Amendment filed May 4, 2004. But there is no indication in the Office Action that the amendment proposed in that Preliminary Amendment was in fact entered. The undersigned will operate on the presumption that the Preliminary Amendment was entered, and that the claim of priority presented in that paper has been accepted by the Patent and Trademark Office. However, an express statement to that effect, in the next paper from the Patent and Trademark Office, is respectfully requested, so that the file of this application can be clear.

[14] Hulyalker et al., *supra*, column 1, lines 43 through 58; column 3, lines 31 through 52.

For the above reasons, Applicants respectfully submit that all claims now in this case are in condition for allowance. Reconsideration of the above-referenced application is therefore respectfully requested.

Respectfully submitted,

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